APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,951	03/16/2001	Toshiaki Mori	NIT-266	5297

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EXAMINER
ALI, SYED J

ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/808,951	MORI ET AL.
	Examiner	Art Unit	
	Syed J Ali	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to the amendment filed January 21, 2005. Claims 1-9 are

presented for examination.

2.   The text of those sections of Title 35, U.S. code not included in this office action can be

found in a prior office action.

Priority

3.   **Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which**

papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

4.   **Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al.**

(Japanese Application Number 4-257013) (hereinafter Tanaka).

5.   As per claim 1, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in a virtual machine system which includes one or more CPUs, a main

storage and an I/O control unit, said main storage storing an active OS (paragraphs 0009-0010), a

standby OS (paragraphs 0009-0010), a virtual machine monitor (paragraph 0002) and application

programs to be executed by the CPUs (paragraph 0002), said method realized by the virtual

machine monitor comprising the steps of:

allocating a main storage area sufficient to execute the application programs to be

executed under the active OS to the active OS (paragraphs 0010, 0023, 0030);

allocating a smaller main storage area insufficient to execute the application programs to

the standby OS (paragraphs 0010, 0029); and

when a failure in the active OS is detected, reallocating a part or all of the main storage

area occupied by both the active OS and the application programs to the standby OS (paragraphs

0010, 0023, 0025, 0029, 0059).

6.   As per claim 2, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in the virtual machine system according to claim 1, said virtual machine

system further including an auxiliary memory for storing hot standby application programs

performing the same application as the application programs (paragraph 0010), further

comprising the steps of:

when a failure in the active OS is detected, reallocating a main storage area occupied by

the application programs to the standby OS (paragraphs 0010, 0023, 0025, 0029, 0059); and

allowing the standby OS to execute the hot standby application programs using the main

storage area allocated to the standby OS (paragraphs 0010, 0023, 0025, 0029, 0059).

7.   As per claim 3, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in the virtual machine system according to claim 1,

said main storage further storing a resource management table which contains the use

amounts of main storage for each of the application programs (paragraphs 0023-0024); a name of

the active OS controlling the execution of each of the application programs (paragraph 0023);

and a name of the standby OS to take over the use amounts of the main storage allocated to a part

or all of the application programs when a failure occurs (paragraph 0023), further comprising the

steps of:

when the failure in the active OS is detected, referring to the resource management table

(paragraphs 0010, 0023, 0025, 0029, 0059); and

issuing a request to the standby OS to take over the use amounts of the main storage as

much as the resource management table indicates (paragraphs 0025, 0029).

8.   As per claim 4, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in a virtual machine system which includes one or more CPUs, a main

storage and an I/O control unit, said main storage storing an active OS (paragraphs 0009-0010), a

standby OS (paragraphs 0009-0010), a virtual machine monitor (paragraph 0002) and application

programs to be executed by the CPUs (paragraph 0002); and information about an amount of

main storage used by each of the application programs under control of the active OS (paragraph

0023), said method realized by the virtual machine monitor comprising the steps of:

when a failure in an application program executed under the active OS is detected,

referring to the information (paragraphs 0010, 0023, 0025, 0029, 0059); and

reallocating a main storage area occupied by the application program in failure to the

standby OS, thereby allowing the standby OS to execute an application program performing the

same application as the application program in failure (paragraphs 0010, 0023, 0025, 0029,

0059).

9.   As per claim 5, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in a virtual machine system which includes one or more CPUs, a main

storage and an I/O control unit, said main storage storing an active OS (paragraphs 0009-0010), a

standby OS (paragraphs 0009-0010), a virtual machine monitor (paragraph 0002) and application

programs to be executed by the CPUs (paragraph 0002), said application programs including

application programs for a hot standby job to be executed under the standby OS upon detecting

failure of a system controlled by the active OS (paragraph 0010), said method realized by the

active OS comprising the steps of:

if resources are sufficient for execution of said application programs, notifying the virtual

machine monitor of which application program is using which resource (paragraphs 0010, 0023,

0025, 0029, 0059); and

if resources are insufficient, obtaining new resources from the virtual machine monitor

(paragraphs 0010-0011, 0025, 0029),

said method realized by the virtual machine monitor comprising the steps of:

when a failure in the active OS or the application programs for a hot standby job is

detected, issuing to standby OS a request to take over the resources occupied by the application

programs for the hot standby job (paragraphs 0010, 0023, 0025, 0029, 0059).

10.   As per claim 6, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in a single computer system which includes one or more CPUs, a main

storage and an I/O control unit, said main storage storing a first OS (paragraphs 0009-0010), a

second OS (paragraphs 0009-0010), a virtual machine monitor (paragraph 0002), a first

application program and a second application program to be executed by the CPUs (paragraph

0002), said second application program performing the same application as said first application

program, said method realized by the first OS comprising the steps of:

reporting resources allocated to the first application program operating on the first OS to

the virtual machine monitor (paragraph 0023);

upon detecting a failure of the first application program, reporting the fact to the virtual

machine monitor (paragraphs 0010, 0023, 0025, 0029, 0059),

said method realized by the virtual machine monitor comprising the steps of:

upon receipt of a failure detection report from the first OS, disconnecting the resources

having been used by the first application program from the first OS (paragraph 0025);

allocating the resources disconnected to the second OS (paragraph 0028-0029); and

requesting the second OS to activate the second application (paragraph 0028-0029),

said method realized by the second OS comprising the step of allocating the resources

used by the second application program when initiated, from the allocated resources (paragraph

0029).

11.   As per claim 7, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in a single computer system which includes one or more CPUs, a main

storage and an I/O control unit, said main storage storing a first OS (paragraphs 0009-0010), a

second OS (paragraphs 0009-0010), a virtual machine monitor (paragraph 0002), a first

application program and a second application program to be executed by the CPUs (paragraph

0002), said second application program performing the same application as said first application

program, said method realized by the first OS comprising the steps of:

        reporting resources allocated to the first application program operating on the first OS to

the virtual machine monitor (paragraph 0023),

        said method realized by the virtual machine monitor comprising the step of:

        upon detecting a failure of the first OS, allocating a part or all of resources having been

used by the first OS to the second OS (paragraphs 0010, 0023, 0025, 0029, 0059); and

        requesting the second OS to activate the second application program (paragraph 0028-

0029); and

        allocating the resources used by the second application program when initiated, from the

allocated resources (paragraph 0029).

12.   As per claim 8, Tanaka teaches the invention as claimed, including a method of allocating

computer resources in the single computer system according to claim 6, wherein, where the first

OS and the second OS are in standby configuration, when the first OS detects the failure of the

first application program, the virtual machine monitor requests the second OS to active the

second application program only when the first application program is executed in a hot standby

job (paragraphs 0010, 0023, 0025, 0029, 0059).

13.   As per claim 9, Tanaka teaches the invention as claimed, including a virtual machine

system which includes one or more CPUs, a main storage and an I/O control unit, said main

storage storing an active OS (paragraphs 0009-0010), a standby OS (paragraphs 0009-0010), a

virtual machine monitor and application programs to be executed by the CPUs (paragraph 0002),

said active OS including a fault level notification routine that monitors fault levels of the

application programs executed under the active OS (paragraphs 0010, 0023, 0034, 0036), and

when a fault is unrecoverable, reports the fact to the virtual machine monitor; and a resource

disconnection routine that, upon receipt of a request to disconnect resources allocated to the

active OS from the virtual machine monitor, disconnects the requested resources (paragraphs

0010, 0023, 0025, 0029);

said standby OS including a resource engaging routine that, upon receipt of a request to

newly attach resources from the virtual machine monitor, attaches the requested resources to the

standby OS itself (paragraphs 0028-0029); and

said virtual machine monitor including an OS fault detecting routine that detects a fault of

the active OS (paragraph 0025); a means that, upon detecting a fault of the active OS, finds

resources to be reallocated to the standby OS and reports the resources to be newly attached to

the standby OS (paragraph 0028); a means that, upon receipt, from the active OS, of notification

that the application programs are faulty, finds resources to be disconnected and reports them to

the active OS; and a means that, after completion of disconnecting the resources, reports the

resources to be newly attached to the standby OS (paragraph 0023, 0028-0029).

Response to Arguments

14.   **Applicant's arguments filed January 21, 2005 have been fully considered but they**
are not persuasive.

15.   Applicant argues that Tanaka fails to meet the claim limitations because it is allegedly a

system involving distinct computing machines. Specifically, Applicant alleges that in Tanaka,

"the active OS is run on a computer that is different from the computer on which the standby OS

runs." Applicant also alleges that *"Tanaka et al. are also silent with respect to the application*

programs executed under the active OS as well as what should happen in the event of a failure in

the active OS."

16.   Examiner respectfully disagrees. Regarding the former argument, Tanaka is clearly

directed to a single machine implementing multiple logical machines, including multiple

operating systems. For example, paragraph 0001 states, "This invention relates to a machine

system, in particular a machine system where multiple OS are operating on **one machine**"

(emphasis added). Additionally, paragraph 0002 states, "This virtual machine can use multiple

OS with varying use objectives on **one machine**." (emphasis added). Regarding the latter

argument, Tanaka clearly deals with reallocating storage to a standby OS upon detection of a failure of the primary OS. For example, paragraph 0054 states "events involving **failures on the primary machine** 500 where the processing on this primary machine 500 is transferred to the OS on the secondary machine 600 virtual machine VM-1 by the system conversion unit." (emphasis added).

Conclusion

17.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
March 15, 2005

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